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ABSTRACT

The neurological impress approach to remedial reading was investigated in a spring session involving 20 children and in a summer session involving 24 children. Children ranging in age from 7 to 14 were paired according to age and intelligence and then were assigned randomly to experimental or control treatments. All were at least a year behind in reading achievement and had low auditory-perception scores. Instruction was administered on a one-to-one basis by graduate students trained in carrying out the impress method. Subjects were pre- and posttested for word recognition, oral comprehension, and silent comprehension. Significant differences favoring the experimental group were found for oral reading comprehension and silent reading comprehension in both sessions, and for word recognition during the summer session. Problems such as fatigue and the need for close supervision of the instructional program are discussed. (AA)

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The Effect of Neurological Impress
On Reading-Disabled Children With
Auditory Perception Impairments

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The Effect of Neurological Impress on Reading - Disabled Children with Auditory Perception Impairments

Introduction

The purpose of this study was to determine the effects of Neurological Impress as an approach to remediation of reading disabilities in children classified as learning disabled (auditory perception impairments).

Neurological Impress as a means of teaching reading to remedial cases has generated a number of articles on the topic but very little research. However, Spache (1976) observed that "the method is intriguing enough to warrant some careful comparative research to discover what, if anything, it will add to reading instruction."

There is little research on the concept and the results of such research by proponents has been inconclusive. Further, to our knowledge, it has never been attempted as a remedial technique research topic for children with auditory perception impairments. However, a review of the limited research available may be helpful.

Heckelman (1969) selected twenty-four students who came from a group of children having the lowest level of achievement upon entering seventh grade. Remedial reading instruction had been ineffective with this group prior to the study. Over a period of six weeks, each student received seven hours and fifteen minutes of reading by the impress method. Scores obtained from the Gilmore Oral Reading Test indicated a mean gain of 1.9 in grade level reading ability.

Miller (1969) used the impress method with one student after a number of remedial attempts had failed. The student was given fifteen minutes of instruction per day for a period of eight weeks and a post-test indicated that the level of retardation had diminished from 1.0 to .5.

Hollingsworth (1970) suggested that the impress method was too time consuming and physically exhausting in a one to one setting and conducted a study to overcome the problems aforementioned. He utilized tapes and a classroom wireless system with eight pairs of children. The post-test indicated no gain in vocabulary, comprehension, speed or accuracy by the experimental group over the control. However, Railsback (1969) in a similar taped program, reported that his subjects gained a half year or more in test scores per instructional month (forty hours per month).

The following questions were proposed as guidelines for the study:

- Q₁ Will the learning disabled child with auditory perception impairments receiving the impress procedure realize greater gains in word recognition than a similar group not receiving this treatment?
- Q₂ Will the learning disabled child with auditory perception impairments receiving the impress procedure realize greater gains in oral reading comprehension than a similar group not receiving this treatment?

Q3 Will the learning disabled child with auditory perception impairments receiving the impress procedure realize greater gains in silent reading comprehension than a similar group not receiving this treatment?

Q4 Will the learning disabled child with auditory perception impairments receiving the impress procedure for fifteen minutes twice a week during the fifteen week period realize greater gains than the child receiving ten minutes a day for five days a week over a six week period.

Population

Twenty children were selected for the procedure during the spring session and twenty-four different children were utilized for the summer session. The children in the study range in age from seven to fourteen. The spring and summer session groups were paired according to chronological age and intelligence (as determined by the Slosson Intelligence Test, Slosson Educational Publications, 1963) and then each child was randomly assigned to

either the experimental or control group for the spring or summer session.

Traditional reading approaches had failed with these children despite the fact that IQ's of all but two were 100 or above. The students were from one to four years retarded in reading development.

Design

The spring group reported to the reading clinic twice a week for fifteen weeks. These students received two hours of instruction per week. The only difference between the spring and summer experimental group in the program was that the spring experimental group received 15 minutes of Neurological Impress each day of attendance for a total of seven and one-half hours of impress and the summer experimental students attended five days per week for six weeks. They were exposed to ten minutes of impress each day for a total of five hours.

The instruction was initiated on a one-to-one basis. The tutors were graduate students in reading who were in the final course of their master's degree program. Prior to carrying out the instruction, the tutors were trained in the procedural aspects of the impress method.

The spring and summer groups were pre-tested with Form A of the Standard Reading Inventory (McCracken, 1966) and post-tested with Form B of the same instrument. Three subtest scores were obtained from this test: Word Recognition, Oral Comprehension and

Silent Comprehension. An analysis of co-variance was utilized as the statistical procedure to compare the post-test scores from each group. The pre-test served as the co-variant in the analysis of the post-test scores.

Results

The mean pre-post scores of the control and experimental groups, Spring, 1976, are listed in Table I.

Table I - Mean Pre-Post Scores of
Control and Experimental Groups, Grade Equivalency
Spring, 1976

	Control		Experimental	
	Pre	Post	Pre	Post
Oral Reading	2.54	3.04	2.65	4.46
Word Recognition	1.98	2.46	2.75	3.96
Silent Reading	2.05	2.50	2.95	4.65

The spring experimental group had a higher grade equivalent in oral reading, word recognition and silent reading prior to instruction than the control group. This could account for the greater success of the experimental group.

Table II contains the gain scores for the control and experimental groups of Spring, 1976.

Table II - Gain Scores for
Control and Experimental Groups

	Control	Experimental
Oral Reading	.50	1.81
Word Recognition	.48	1.21
Silent Reading	.45	1.70

Table III contains the analysis of co-variance (Oral Reading),
Spring, 1976.

Table III - Analysis of Co-Variance Results,
Control-Experimental Group Grade
Equivalency of Oral Reading Scores
Spring, 1976

Source	SS	DF	MS	F
Total	23.2711	18		
Error	14.6175	17	.859851	
Treatments	8.65364	1	8.65364	10.0641

Adjusted Means

Control (2) = 3.09188

Experimental (4) = 4.40812

The Oral Reading gains by the experimental group with 1 and 17
degrees of freedom was significant at the .05 level of confidence.

The analysis of co-variance (word recognition) is found in
Table IV.

Table IV - Analysis of Co-Variance Results,
Control-Experimental Group Grade Equivalency
of Word Recognition Scores
Spring, 1976

Source	SS	DF	MS	F
Total	12.3621	18		
Error	10.1839	17	.599056	
Treatments	2.17816	1	2.17816	3.63599

Adjusted Means

Control (2) = 2.86993

Experimental (4) = 3.55007

The word recognition gains by the experimental group with 1 and 17 degrees of freedom was not significant at the .05 level of confidence.

Table V contains the analysis of co-variance results (silent reading).

Table V - Analysis of Co-Variance Results,
Control-Experimental Group Grade Equivalency
Silent Reading Scores
Spring, 1976

Source	SS	DF	MS	F
Total	18.6573	18		
Error	12.2216	17	.718917	
Treatments	6.43567	1	6.43567	8.95189
Adjusted Means				
Control	(2) = 2.97485			
Experimental	(4) = 4.17515			

The silent reading gains by the experimental group with 1 and 17 degrees of freedom was significant at the .05 level of confidence.

Table VI shows the mean pre-post grade equivalent scores, summer, 1976.

Table VI - Mean Pre-Post Grade Equivalent
Scores of Control and Experimental Groups
Summer, 1976

	Control		Experimental	
	Pre	Post	Pre	Post
Oral Reading	2.71	3.33	2.14	4.51
Word Recognition	2.92	3.47	2.09	4.17
Silent Reading	2.33	2.66	1.70	3.5

The Control Group had a higher grade equivalent in oral reading, silent reading and word recognition prior to instruction than the experimental group and the post scores of the experimental group grade equivalents exceed those of the control group.

The gain scores for the Control and Experimental Groups, Summer, 1976 are presented in Table VII.

Table VII - Gain Scores for Control
and Experimental Groups
Summer, 1976

	Control	Experimental
Oral Reading	.62	2.37
Word Recognition	.55	2.08
Silent Reading	.33	2.8

An analysis of co-variance (oral reading), Summer, 1976 is presented in Table VIII.

Table VIII - Analysis of Co-Variance Results
Control-Experimental Groups Grade
Equivalency Oral Reading Scores
Summer, 1976

Source	SS	DF	MS	F
Total	24.2097	22		
Error	8.42941	21	.401401	
Treatments	15.7803	1	15.7803	39.313

Adjusted Means
Control = 3.06699
Experimental = 4.783

The above is significant at the .05 level of confidence with 1 and 21 degrees of freedom.

Table IX contains the analysis of co-variance for word recognition, Summer, 1976.

Table IX - Analysis of Co-Variance Results,
Control-Experimental Groups Grade
Equivalency Word Recognition Scores
Summer, 1976

Source	SS	DF	MS	F
Total	14.998	22		
Error	7.58777	21	.361323	
Treatments	7.41019	1	7.41019	20.5085

Adjusted Means
Control = 3.20953
Experimental = 4.44047

Word recognition gains by the experimental group with 1 and 21 degrees of freedom was significant at the .05 level of confidence.

Table X contains the results of the analysis of co-variance for silent reading for Summer, 1976.

Table X - Analysis of Co-Variance Results,
Control-Experimental Groups Grade
Equivalency Silent Reading Scores
Summer, 1976

Source	SS	DF	MS	F
Total	17.0885	22		
Error	6.30925	21	.30044	
Treatments	10.7793	1	10.7793	35.8782

Adjusted Means
Control (2) = 2.37478
Experimental (4) = 3.79188

The silent reading gain by the experimental group with 1 and 21 degrees of freedom was significant at the .05 level of confidence.

The following questions proposed as guidelines for the study are restated:

- Q₁ Will the learning disabled child with auditory perception impairments receiving the impress procedure realize greater gains in word recognition than a similar group not receiving this treatment?
- Q₂ Will the learning disabled child with auditory perception impairments receiving the impress procedure realize greater gains in oral reading comprehension than a similar group not receiving this treatment?
- Q₃ Will the learning disabled child with auditory perception impairments receiving the impress procedure realize greater gains in silent reading comprehension than a similar group not receiving this treatment?
- Q₄ Will the learning disabled child with auditory perception impairments receiving the impress procedure for fifteen minutes twice a week during the fifteen week period realize greater gains than the child receiving ten minutes a day for five days a week over a six week period.

Question one was answered affirmatively for the summer experimental group and negatively for the spring experimental group.

The experimental groups, spring and summer, realized greater gain than the control groups thus answering question two positively.

Silent reading gain was superior in the spring and summer experimental groups. Question three is affirmatively answered.

The spring and summer experimental groups received positive gain from the impress method. The summer group did make gains in word recognition that the spring group did not but it appears that the ten minute daily routine and the fifteen minute regimen twice a week can benefit oral and silent reading.

Discussion

This investigation was concerned with the effects of neurological impress in two different settings on reading disabled children with auditory perception impairments.

The small number of subjects in this pilot study causes one to hesitate in generalizing to extremes. However, the fact that growth in grade equivalencies favored the experimental groups in the spring and summer groups cannot be underestimated.

The summer program produced the more favorable results. Not only was their significant growth for the experimental group in word recognition, oral reading and silent reading but the fact that the experimental group started out with a lower average grade equivalency than the control group has impact.

As a result of the comparison of growth rates between the summer and spring groups, this study argues favorably for the daily ten minute instruction for an extended period rather than the twice a week approach.

Observations made during the study also argue for the ten minute daily session. Without exception, the clinician and child began to reach a stage of voice and position fatigue after ten minutes, hence the conclusion that the extra five minutes during the spring program was more deleterious than beneficial.

Further, because it is a tiring activity, care should be exercised before beginning such a program. Our program was ideally optimum from the viewpoint that we had the children available and under our control plus the fact that the clinicians were operating in a college class setting and performance was probably superior in that situation. Prior to embarking on such a program, the parameters should be fully discussed and a total commitment given to the project.

Another observation of interest is that all of the students in the study (control and experimental) had performed poorly on the Wepman Auditory Discrimination Test (Language Research Associates, 1973) and the Goldman-Fristoe-Woodcock Test of Auditory Discrimination (American Guidance Service, Inc., 1970). Neurological Impress, although visual processing to a degree, relies heavily on auditory input. Consequently, the argument that is often used against auditory instruction for those with auditory perception impairments is at least subject to challenge as a result of this study.

It must be stressed that there was a reluctance to participate by the children initially. They mumbled or refused to read along at all. This caused other problems. The clinicians in an attempt to invite the children's participation in the act, would slow their

reading pace, often read in a monotone and even ignore punctuation. This requires a close surveillance by the supervisor who should constantly remind the clinician of the proper methodology. Fortunately, that kind of close supervision resulted in the proper methodology and eventual willing participation by the children within six sessions.

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